MonPS37

Efficiency Improvements With the Radiofrequency H— Ion Source RADIS

Taneli Kalvas[1], Olli Tarvainen[1], Jani Komppula[1], Hannu Koivisto[1], Dave Potkins[2], Thomas Stewart[2], Morgan Dehnel[2]

[1]*University of Jyväskylä, Department of Physics, Jyväskylä, Finland*
[2]*D-Pace, Inc., Nelson, B.C., Canada*

Corresponding Author: Taneli Kalvas, taneli.kalvas@jyu.fi

A CW 13.56 MHz radiofrequency-driven H— ion source RADIS is under development at the University of Jyväskylä for replacing an existing filament-driven ion source at the MCC30/15 cyclotron. Previously, production of 1 mA H— beam, which is the target intensity of the ion source, has been reported at 3 kW of RF power [1]. The original ion source front plate with an adjustable electromagnet based filter field, has been replaced with a new front plate with permanent magnet filter field. The new structure is more open and enables a higher flux of ro vibrationally exited molecules towards the plasma electrode and provides a better control of the potential near the extraction due to a stronger separation of the main plasma from the plasma electrode. While the original system provided better control over the e—/H— ratio, the new configuration has led to a higher production efficiency of 1 mA H— at 1.75 kW RF power. The latest results and upgrade plans are presented.

[1] T. Kalvas, *et. al.*, AIP Conf Proc **1655**, 030015 (2015).